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SWEDISH EXPORT PERFORMANCE 1963-1979

by

Eva Christina Horwitz

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A Constant Market Shares Analysis

Abstract

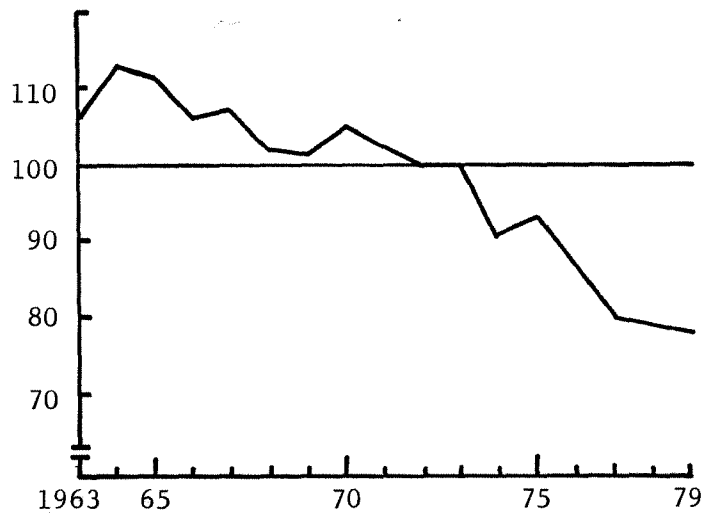
The present paper is part of a study concerning the international competitiveness of Swedish industry. The two aspects of the broad and complex question of competitiveness that have been studied so far relate to estimates of the price-elasticity of Swedish exports and developments in Swedish export market shares.¹

The main purpose of the present paper is to investigate to what extent the decline in the Swedish share in world trade during the 1970'ies, illustrated by Figure 1, can be explained by an unfavourable commodity or country composition. The analysis is based on yearly figures of Swedish exports to 14 OECD countries covering the 1963-79 period. A very detailed breakdown into commodity groups has been used.

The measure of changes in competitiveness brought forward in this exercise is based on the difference between actual change in Swedish exports and the change that would have occurred had market shares to each market and each commodity been maintained.

¹ Horwitz (1981) and Horwitz (1979).

Figure 1. Swedish market shares of OECD imports 1963-
1979¹
(Index 1973=100)



¹ OECD = Sum of 14 countries, see appendix table 1

We find that this constant market shares analysis of yearly changes in exports gives substantially more information about factors that explain developments illustrated in Figure 1. We find a very distinct cyclical pattern of changes in competitiveness. Market shares are lost in years of high growth in the Swedish economy. Limitations on productive capacity seems to be the reason behind losses in market shares in the 1963-1974 period.

After 1974 losses in competitiveness can be related to the Swedish relative cost situation. Findings in this paper strongly suggest that all analysis of Swedish export performance, estimates of price elasticities etc should incorporate supply as well as demand factors.

1. A constant market share analysis

The starting point for a constant-market-share analysis is that a country's export performance as compared to trade in general depends to a great deal on its specialization in commodities and the destination of its exports. World demand is bouyant for some goods and sluggish for others, and markets differ in respect to the growth rate of imports. Consequently, a country surrounded by slow growing neighbours is likely to perform less well than the world average.

Differencies between countries in export potential can be captured by three distinct factors.

- The overall export growth factor
- The commodity composition export growth factor
- The geographic-composition export growth factor.

The deviation of the actual change in exports and calculation of market shares had the influences of the country and commodity factor been constant will result in an "unexplained" residual which is attributed to changes in the "competitive" position. This residual factor will be the focus of this paper. It is usually called competitiveness factor.

In order to clarify the exposition the following symbols are used in the description of the actual and "potential" changes being calculated.

- $v_{..}$ = Exports in base year (period 1)
- $v'_{..}$ = Exports in period 2
- $v_{.j}$ = Exports to country j
- $v_{i.}$ = Exports of commodity i
- r = Increase in total world exports
- r_i = Percentage increase in world exports of commodity i from period 1 to period 2
- r_{ij} = percentage increase in world exports of commodity i to country j from period 1 to period 2.

If we regard exports as a single good destined to a single market and consequently disregard the commodity and market composition the following identity

$$v'_{..} - v_{..} = r \times v_{..} + (v'_{..} - v_{..} - r \times v_{..}) \quad (1)$$

will split the increase in exports into one part explained by the increase in total trade and one unexplained residual due to changes in competitive-

The method and notation follows Leamer and Stern (1970) Chapter 7.

ness. This is of course a rather crude measure of market shares. Some improvement is obtained by a "second" level of analysis whereby the effect of commodity composition can be singled out. For every group of commodities

$$V'_{i.} - V_{i.} \equiv r_i \times V_{i.} + (V'_{i.} - V_{i.} - r_i \times V_{i.}) \quad (2)$$

Summing over all commodities gives

$$V'_{..} - V_{..} \equiv \sum_i r_i \times V_{i.} + \sum_i (V'_{i.} - V_{i.} - r_i \times V_{i.}) \quad (3)$$

$$V'_{..} - V_{..} \equiv r \times V_{..} + \sum_i (r_i - r) V_{i.} + \sum_i (V'_{i.} - V_{i.} - r_i \times V_{i.}) \quad (4)$$

Proceeding to a "third level" analysis we are looking for country as well as commodity effects. In order to get this we start with the identity

$$V'_{ij} - V_{ij} \equiv r_{ij} \times V_{ij} + (V'_{ij} - V_{ij} - r_{ij} \times V_{ij}) \quad (5)$$

and summarize over countries and commodities, leading to

$$V'_{..} - V_{..} \equiv \sum_{ij} r_{ij} \times V_{ij} + \sum_{ij} (V'_{ij} - V_{ij} - r_{ij} \times V_{ij}) \quad (6)$$

$$\equiv r \times V_{..} + \sum_i (r_i - r) \times V_{i.} + \sum_{ij} (r_{ij} - r_i) \times V_{ij}$$

$$+ \sum_{ij} (V'_{ij} - V_{ij} - r_{ij} \times V_{ij})$$

This expression divides the increase in total exports into four components.

1. The overall trade growth factor: $rxV_{..}$
2. The commodity composition factor: $\sum_i (r_i - r) x V_i$.
3. The market faktor: $\sum_{ij} (r_{ij} - r_i) x V_{ij}$
4. The competitiveness factor: $\sum_{ij} (V_{ij}^i - V_{ij} - r_{ij} x V_{ij})$

b) Data

For the purpose of this study world trade is represented by the imports to 14 OECD countries and Swedish exports to these markets is assumed to be identical to imports from Sweden as reported by the countries concerned.¹

The constant market shares analysis is calculated on yearly data covering the value of Swedish exports to 14 OECD countries in 1963 to 1979. Swedish imports to each market is compared with total imports to each country for 41 different commodity groups. The level of aggregation has been chosen so that commodity groups should be as homogenous as possible. A two digit SITC classification has been used, except in the case of SITC 0-1 (foodstuff etc.), SITC 3 (mineral fuels, lubricants and related materials) and SITC 4 (animal and vegetable oils fats and waxes) where one-digit data is used. Data for 1978-79 published in SITC rev.2 has been crudely reclassified to be compatible with the longer series.²

¹ OECD Trade by Commodities, Ser.B.

² A list of commodity groups used as well as values for some years are found in the appendix.

c) Swedish export performance 1963-1979

Table 1 summarizes the results year by year i.e. compares the actual increase in Swedish exports (col.2) to a "potential" increase had the share of each commodity to each country been maintained (col.3).

The overall development of market shares is given by a comparison of col.2 and col.3. During a few years the actual change in Swedish exports exceeded the general increase in world trade. In 1964, 1967, 1970, 1973 and 1975 the growth of Swedish exports was marginally higher than what could be expected given the overall import increase in our main markets.

Col. 4 indicates the extent to which Swedish exports are concentrated in commodities with growth rates more (or less) favorable than the world average. A positive sign indicates that Swedish exports are concentrated to relatively fast growing commodities. A negative sign indicates a concentration to slowly growing commodity markets.

In a corresponding way col. 5 is positive if Swedish exports are concentrated to markets that are experiencing relatively rapid growth and negative if important Swedish export markets are relatively stagnant. We can see that the pattern differs as to the explanation for the decline in the market shares. A tentative conclusion to be drawn from the table is that in the 1970'ies the commodity composition of Swedish exports worked in a nega-

Table 1. Swedish export performance 1963-1979
Annual data. Million U.S. dollars

	Swedish exports ^a (1)	Actual change in exports (2)	Calculated increase, assuming no market loss (3)	Change due to commodity composition (4)	Change due to market distribution (5)	Change due to "competitiveness" (6)
1964	3 102	477	326	84	103	- 36
1965	3 364	262	275	14	27	- 54
1966	3 585	222	384	37	-166	- 33
1967	3 803	218	208	30	- 27	7
1968	4 118	314	494	75	-196	- 59
1969	4 693	574	639	101	4	-170
1970	5 621	928	702	70	144	12
1971	6 100	479	649	-145	-137	112
1972	7 094	995	1 159	- 35	-181	52
1973	9 774	2 680	2 668	- 49	222	-161
1974	12 353	2 578	3 863	-1 037	146	-394
1975	12 789	437	118	-392	543	168
1976	13 869	1 080	2 052	192	-240	-924
1977	14 592	723	1 942	-251	-240	-728
1978	16 861	2 269	2 630	553	-1 063	148
1979	21 438	4 577	4 721	-341	131	66

^a To 14 countries, covers about 75 % of total exports.

Note: (1) The calculations in the columns above corresponds to the symbols used previously in the text in the following way:

col.1 $V_{..}$ col.4 $\sum_i (r_i - r) x V_i$
col.2 $V'_{..} - V_{..}$ col.5 $\sum_{ij} (r_{ij} - r_i) x V_{ij}$
col.3 $r x V_{..}$ col.6 $\sum_{ij} (V'_{ij} - V_{ij} - r_{ij} x V_{ij})$

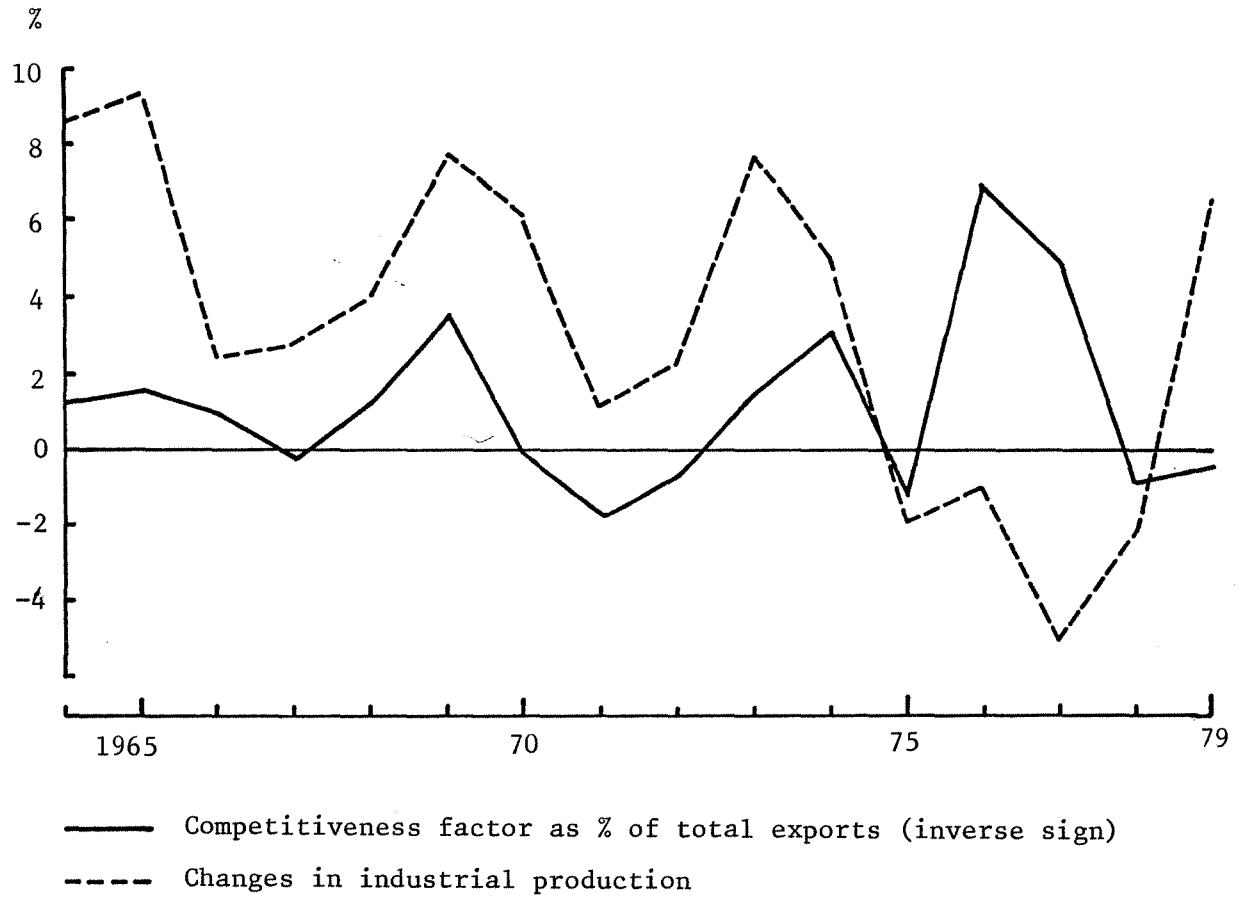
(2) col. 2 = sum of col. 3-6.

tive direction. The country effect worked predominantly in a negative way in the 1960'ies as well as in the 1970,ies. The distinction between commodity and country composition should, however, not be made a major point since the relative magnitude is affected by the choice of order of calculating the two effects. The combined effect was slightly positive in the 1960'ies and negative in the 1970'ies.

The purpose of the excercise was to single out the competitiveness effect in col.6. We find that in 9 out of 16 years there was a loss of competitiveness, i.e. the increase in exports was less than expected had the market share of every commodity to every market been maintained.

Yearly variations in the competitiveness factor in col 6 are brought out more clearly in Figure 2. The solid line shows changes in competitiveness measured as percentage of total exports (col 6 divided by col 1). To facilitate comparison with a business cycle index signs have been reversed. An increase in the solid line means a loss of competitiveness. In order to show changes in competitiveness over the business cycle the dotted line showing annual changes in the industrial production index has been included. Figure 2 clearly illustrates that in general heavy losses of market shares coincide with business cycle peaks. This patterns clearly holds until 1974.

Figure 2. Changes in Competitiveness over the business cycle



The question of particular interest is of course the development of market shares in the latter part of the 1970'ies, a period marked by the slump in world trade and the very high increase in Swedish relative costs 1975-76, followed by several devaluations in 1977. Table 1 shows that heavy losses in competitiveness occurred in 1976-77.

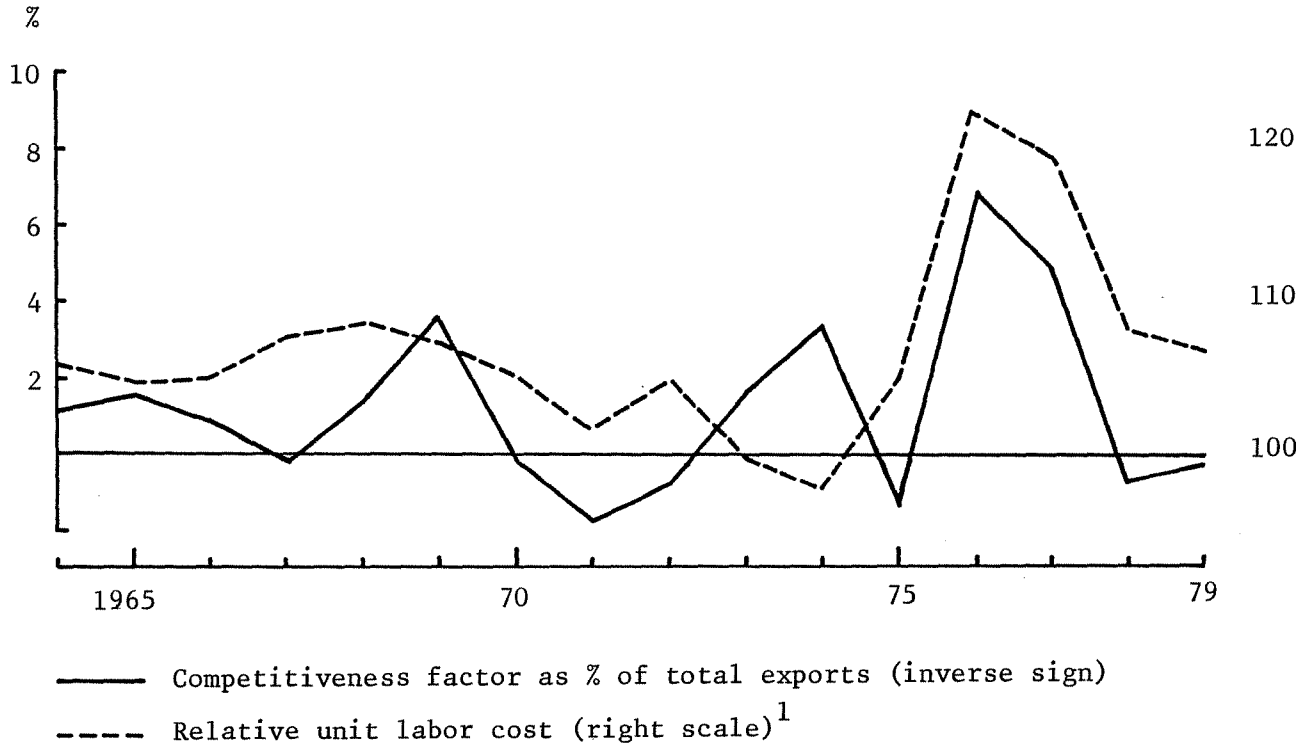
During this period Swedish industrial production actually fell and we have no reason to suspect capacity limitations to be the factor behind decreases in market shares.

Figure 3 relates changes in competitiveness to an index of relative unit labor costs for Sweden. Judging from this diagram losses in Swedish market shares is closely connected to deterioration in the relative cost situation.

Disaggregated data for 1978-79 used in this exercise have only recently become available. The new information to be drawn from table 1 is that the continuation of market losses these years as illustrated in figure 1 goes together with a slight "improvement" in competitiveness. In 1978-79 Swedish exports to the OECD market did better than maintaining its share of each product to each market.

The overall loss of market shares was due to the fact that the overall increase in trade was lower in areas where Swedish exports have a relatively higher shares.

Figure 3 Changes in Competitiveness and changes in relative costs



¹ Source: IMF International Financial Statistics

Appendix. Constant-Market-Share Analysis of Changes in
Swedish Export 1963-1979

Table 1. Market Breakdown
(with respect to imports into 14 OECD-countries)

Markets	Total imports			Imports from Sweden		
	1963	1973	1979	1963	1973	1979
1 Norway	1 821	6 239	13 732	346	1 051	2 426
2 Denmark	2 112	7 672	18 412	252	1 214	2 348
3 Finland	1 177	4 331	11 390	135	770	1 573
4 Germany	13 019	54 495	157 682	498	1 349	3 355
5 United Kingdom	13 496	38 879	102 506	457	1 794	3 347
6 France	8 724	36 774	106 711	166	707	1 736
7 Belgium	5 119	21 826	60 186	134	412	924
8 Netherlands	5 967	23 530	66 930	162	468	1 298
9 Austria	1 676	6 719	20 230	27	198	391
10 Switzerland	3 235	11 544	29 309	72	347	626
11 Italy	7 581	27 844	76 474	147	374	923
12 United States	17 014	69 477	217 462	181	757	1 755
13 Canada	6 081	23 305	52 616	31	166	327
14 Japan	6 271	38 135	110 108	19	168	413
Total	93 743	370 770	1 043 745	2 625	9 774	21 440

Source: OECD Trade by Commodities (Serie B).

Table 2. Commodities Breakdown

	Commodi- ties	Total imports 14 countries			Total from Sweden			
		SITC	1963	1973	1979	1963	1973	1979
1	0+1	18	796	53 512	114 199	100	232	389
2	21		883	1 986	4 724	27	35	108
3	22	1	209	3 614	7 117	4	23	39
4	23		925	1 714	4 251	0	1	8
5	24	2	458	9 604	19 984	221	823	1 157
6	25	1	253	2 928	6 721	342	745	1 207
7	26	4	373	7 060	8 951	9	17	29
8	27	1	133	2 794	6 582	11	34	71
9	28	3	352	10 900	23 996	241	485	590
10	29		784	2 219	5 197	3	12	30
11	3	11	007	44 906	235 613	8	99	718
12	4		831	2 382	5 505	8	13	31
13	51	1	796	8 689	20 451	25	86	151
14	52		84	134	10 089	0	4	162
15	53		383	1 693	4 054	3	23	51
16	54		416	2 543	6 971	8	47	216
17	55		312	1 395	3 705	3	27	54
18	56		395	1 107	3 564	1	2	4
19	57		34	136	240	3	7	8
20	58		789	5 151	15 764	23	142	425
21	59		682	2 720	7 665	13	55	127
22	61		448	1 653	4 445	9	35	82
23	62		423	2 452	6 840	24	88	180
24	63		616	3 332	6 275	22	136	265
25	64	1	937	6 369	16 506	271	914	2 266
26	65	3	710	13 753	30 339	35	151	273
27	66	1	668	9 556	26 927	22	111	237
28	67	3	874	15 192	35 033	186	743	1 725
29	68	3	527	13 401	29 370	43	203	587
30	69	1	538	6 913	19 116	80	336	830
31	71		819	34 917	91 178	351	1 453	3 432
32	72	3	340	20 573	50 979	97	604	1 185
33	73	4	904	36 381	98 665	303	1 392	3 084
34	81		167	1 028	2 081	19	78	107
35	82		240	2 417	7 484	12	131	371
36	83		85	582	2 142	1	4	6
37	84	1	397	9 745	29 019	26	120	195
38	85		380	2 640	8 908	3	28	46
39	86	1	304	6 561	21 824	16	80	307
40	89	2	059	11 904	28 978	33	186	479
41	9	2	074	4 213	12 290	19	64	205
Total		93	743	370 770	1 043 745	2 625	9 774	21 440

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